

A P P L I C A T I O N

F O R

UNITED STATES OF AMERICA

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S P E C I F I C A T I O N

TO ALL WHOM IT MAY CONCERN:

Be it known that I,

Dido BONI  
Italian citizen  
of REGGIO EMILIA – ITALY

have invented certain improvements in

“DEVICE FOR CONTROLLED ACTIVATION OF THE PRESSURIZED  
SUPPLY OF AIR FOR INFLATING TIRES IN MACHINES FOR TIRE  
DEALERS”

of which the following description in connection with the accompanying  
drawings is a specification, like reference characters on the drawings  
indicating like parts in the several figures.

The present invention relates to a device for controlled activation of  
5 the pressurized supply of air for inflating tires in machines for tire dealers.

#### BACKGROUND OF THE INVENTION

In the work performed by tire dealers, it is sometimes necessary to work on tires that have different characteristics and dimensions depending on the vehicle on which they are fitted and on the use of said vehicle.

10 Tire inflation pressures therefore have widely different values and the machines used by tire dealers must be able to supply air at these pressures in order to be able to inflate the tires correctly, for example after replacement or other maintenance.

On the other hand, standards require tire dealers to work in conditions  
15 of absolute safety, avoiding the risks of accidental bursting normally caused by the introduction of air in overpressure in the tires.

Such pressures can be supplied by a tank, with which tire changing machines are normally provided and in which the air is kept at values on the order of 9-10 bars, or by an external supply source.

20 A limiting valve fitted on the pneumatic circuit of the machines downstream of said tank or of the coupling to said external supply source allows to reduce said pressure to the nominal values set by tire manufacturers, normally intended for cars or light utility vehicles, on the order of 3-3.5 bars; this reduction is explicitly necessary because the  
25 introduction of air at pressures above said values would cause deformation of the carcass of said tires.

However, in the use of said machines to inflate the tires of trucks, so-called derivative vehicles or building-yard machines, the pressures required are significantly higher, on the order of 6 bars, and therefore said machines  
30 must be equipped not only with appropriate and mandatory safety systems

designed to lock the wheels thereon in case of accidental bursting of the tires during inflation, but also with devices that allow to supply compressed air at both of said values and as required.

These known devices substantially consist of a valve element that is 5 interposed on the pneumatic circuit between the tank and the so-called inflation gun and has two operating positions that can be selected by the operator: a first position, on a lower pressure value, which is generally suitable for car tires, and a second higher value for tires of trucks and building-yard machines.

10 However, during normal work, between one operation and the next said valve element may be accidentally left in the position for supplying air at higher pressure, i.e., around 6 bars, while the tire dealer is about to inflate 15 a car tire, for which the maximum allowed pressure is approximately 3.5 bars, with consequent instant damage to the carcass of the tire due to the pressure shock or, worse still, with bursting of said tire and severe risk for the safety of the tire dealer, who is practically in direct contact with the machine and with the tire.

As an alternative, if said valve elements are not used on a single machine, it is necessary to have two machines for the same function, for 20 example for fitting and removing tires, one of said machines being provided with a pneumatic system set to a lower pressure value and one being provided with a pneumatic system set to the higher pressure value: in this case, as mentioned, it is necessary to provide specific burst protection devices in association with the machines.

25 In this second case, the costs for this availability are doubled.

#### SUMMARY OF THE INVENTION

The aim of the present invention is to eliminate the drawbacks noted above of the background art, by providing a device for controlled activation 30 of the pressurized supply of air for inflating tires in machines for tire dealers, which allows said tire dealers to work in maximum safety for

themselves and for the structure of the tires, achieving both of these goals with a single machine in order to contain overall costs.

This aim and this and other objects that will become better apparent hereinafter are achieved by the present device for controlled activation of  
5 the pressurized supply of air for inflating tires in machines for tire dealers as defined in the appended claims.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a  
10 preferred but not exclusive embodiment of a device for controlled activation of the pressurized supply of air for inflating tires in machines for tire dealers, illustrated by way of non-limiting example in the accompanying drawings, wherein:

Figure 1 is a diagram of the pneumatic system of the device for controlled activation of the overpressure supply of air for inflating tires in machines for tire dealers according to the invention, in a configuration for the normal dispensing of air at a minimum pressure value;  
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Figure 2 is an end portion of the diagram of Figure 1, in a configuration for dispensing air in overpressure.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to the figures, the reference numeral 100 designates a device for controlled activation of the overpressure supply of air for inflating tires in machines for tire dealers, which is composed of a feeder means for supplying air under pressure, for example a tank 1 or an external source, which by way of respective branches of a pneumatic line 2 is connected in parallel to two pressure regulator means constituted, for example, by regulators, respectively a first regulator 3, which is set to a lower pressure, approximately 3.5 bars, and a second pressure regulator 4, which is set to a higher pressure, approximately 6 bars.  
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30 A selection valve means, constituted, for example, by a selector valve

element 5 is provided in output to the first and second regulator means 3 and 4, which are connected to said selector valve element by means of the extensions of said branches of the pneumatic line 2; downstream of the valve means 5 there is a means 6 for dispensing air for inflation, which is 5 normally constituted by a so-called inflator gun.

The valve means 5 is of the type with two positions and can move between one position and the other by being actuated from outside by an operator by means of a pushbutton or a lever 7 and in contrast with return means 8, which are normally of the elastic type; the pushbutton or lever 7 is 10 preferably arranged on a control panel of a machine for tire dealers, for example a tire changing machine.

In the position for normal use of the device 100 according to the invention, shown in Figure 1, the valve means 5 directly connects the dispensing means 6 to the first regulator means 3, which provides 15 pressurized inflation air at a value, approximately 3.5 bars, that is lower than that of the accumulation tank 1 or of the external source (approximately 9-10 bars): in this configuration, the second regulator means 4 is disconnected and the tire dealer can inflate the tires, for example of a car, with the assurance that the value of 3.5 bars cannot be exceeded, 20 because the first regulator means 3 would be activated, interrupting the pressurized air supply flow.

When the availability of inflation air at a higher pressure is functionally required, the tire dealer acts on the lever 7, moving and retaining intentionally and forcibly the valve means 5 in the second possible 25 configuration, which is shown in Figure 2 and in which the dispensing means 6 is connected directly to the second regulator means 4, which is set to approximately 6 bars, while the first regulator means is disconnected; the forced action of the tire dealer loads the return means 8 and keeps it loaded for the entire time interval required by the intervention.

30 As soon as the tire dealer intentionally or accidentally releases the

lever 7 (or the pushbutton), the valve means 5, subjected to the action of the return means 8 loaded by the movement of the valve means 5, returns to the initial condition of normal supply of air at the lower pressure, i.e., at 3.5 bars.

5        In practice it has been found that the described invention achieves the proposed aim and object.

The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the protective scope as defined by the content of the appended claims.

10      All the details may further be replaced with other technically equivalent ones.

In practice, the materials used, as well as the shapes and the dimensions, may be any according to requirements without thereby abandoning the scope of the protection of the present invention.

15      The disclosures in Italian Patent Application No. MO2003A000130 from which this application claims priority are incorporated herein by reference.